Message

**Sent**: 7/30/2018 8:05:12 PM
**To**: Baker, Lorie [Baker.Lorie@epa.gov]
**Subject**: RE: Hydro Review: New Cumberland Sanitation Landfill
**Attachments**: FW: New Cumberland

Lorie,

Attached is what WVDEP provided me. Is this what you were looking for?

Thanks,

Justin Bleiler
Site Assessment Manager, HSCD
Environmental Protection Agency, Region 3
1650 Arch St., 3HS12
Philadelphia, PA 19103
215-814-3308
bleiler.justin@epa.gov

**From:** Baker, Lorie
**Sent:** Wednesday, July 11, 2018 9:08 AM
**To:** Bleiler, Justin <Bleiler.Justin@epa.gov>
**Subject:** RE: Hydro Review: New Cumberland Sanitation Landfill

Justin,

With all of your Minden knowledge, would you know where to get mining maps of this area?

**From:** Bleiler, Justin
**Sent:** Wednesday, July 11, 2018 8:53 AM
**To:** Baker, Lorie <Baker.Lorie@epa.gov>
**Subject:** RE: Hydro Review: New Cumberland Sanitation Landfill

Hey Lorie,

I can't find a response to this email so I just wanted to check in to see your thoughts.

Thanks,

Justin Bleiler
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bleiler.justin@epa.gov

**From:** Bleiler, Justin
**Sent:** Friday, June 22, 2018 11:55 AM
**To:** Baker, Lorie <Baker.Lorie@epa.gov>
**Subject:** FW: Hydro Review: New Cumberland Sanitation Landfill

Hi Lorie,

I hope you had a nice vacation! Per your suggestion, I ran this by WVDEP and they suggested that we use START. Does that sound like a plan? If so, I can start drafting the TDD paperwork. Would I call it an abbreviated SI, or maybe an ESI? There have been 2 SIs and 3 SRAs already done for this site so maybe I could also call it an SI #3. Please let me know your thoughts.

Thanks,

Justin Bleiler
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**From:** McDougal, Jason S [mailto:Jason.S.McDougal@wv.gov]
**Sent:** Friday, June 15, 2018 1:26 PM
**To:** Bleiler, Justin <Bleiler.Justin@epa.gov>
**Subject:** RE: Hydro Review: New Cumberland Sanitation Landfill

Justin,
It would be best if you used the START contractor.
Thanks
Jake

**From:** Bleiler, Justin <Bleiler.Justin@epa.gov>
**Sent:** Thursday, June 14, 2018 4:54 PM
**To:** McDougal, Jason S <Jason.S.McDougal@wv.gov>
**Subject:** FW: Hydro Review: New Cumberland Sanitation Landfill

Hi Jake,

I received the following hydro recommendations for the New Cumberland site. Essentially it amounts to installing some deep wells to better understand the subsurface. Is this something that would be feasible with your current budget? I know we have the Libbey and White Park assessments coming up which will use some of the funds. If it is not feasible under the CA, we can use our START contractors to do it. So please let me know one way or the other.

Thanks,

Justin Bleiler
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**From:** Ayodele, Ayowale
**Sent:** Thursday, June 14, 2018 3:46 PM
**To:** Bleiler, Justin <Bleiler.Justin@epa.gov>
**Cc:** Mohollen, Laura <Mohollen.Laura@epa.gov>; Davies, Kathy <Davies.Kathy@epa.gov>
**Subject:** Hydro Review: New Cumberland Sanitation Landfill

Justin,

I have reviewed the New Cumberland Sanitation Landfill Site Reassessment Report, and have the following comment, concern and recommendation for your consideration.

**Concern:**

- Major New Cumberland anticlinal structural feature near the site;
- The Site was mined for coal and clay prior to the landfill operations, perhaps changed the groundwater flow direction;
- Soil on the site consists of leveled and unleveled areas of mixture of rock and other fragments (uneven topography);
- Groundwater on the site flows outwards from the center of the site in a radial pattern;
- Several seeps are located on the southern and western portion of the site;
- No engineered liner identified at the site;
- The Site used in-situ fire clay of unknown depth with no evidence of compaction prior to use;
- Possibility of some coal mine ditches and voids on the site;
- It is actually 8 groundwater monitoring wells, and not 9 monitoring wells as mentioned in the report (figure 3, 4 and 5);
- Design and location of the groundwater monitoring wells; and
- The groundwater monitoring wells, have a larger well screens- which may result to more dilution.

**Comment:**
It appears that the groundwater flow direction on the site has not been properly established. It was assumed from the report that, the groundwater flow toward Ballantyne Run- tributary of the Ohio River because the site slopes to the south-southeast. Generally, water flows from high elevation (high head) to low elevation (low head), however some of the geological features and mining of coal and clay at the site may have altered the groundwater flow.

**Recommendation:**

1. The major anticlinal structure found near the site should be investigated for the connectivity of its limbs, and how this will influence groundwater flow direction. Groundwater will flow in the opposite direction of the bedding plane, if the anticlinal limbs are hydraulically connected; or flow along the bedding plane parallel to the strike, if there is no hydraulic connection. On the other hand, if the elevation of the impermeable formation under the hinge of an anticline is higher than the foot of the anticline, the water will flow towards the foot of the same limbs, in this case the hydraulic connectivity of the limbs are disconnected, and each limb becomes an independent sub-aquifer.

2. The site should undergo further subsurface investigation to ensure the following;
   - Presence of ditches/voids associated with coal and clay mining activity;
   - Groundwater flow direction;
   - Surface water/Groundwater interaction;
   - Horizontal and vertical extent soil and groundwater contamination
   - Proper design of the monitoring wells;

- Proper location of the monitoring wells;
- Placement of the monitoring wells relative to the contamination source;
- Depth and length of the screens; and
- Horizontal spacing between the monitoring wells.

Let me know of any questions.

Thanks,

Wale

*Ayowale Ayodele*
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